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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/715,787	11/17/2000	Peter A. Barany	NRT.0072US	9500
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TROP PRUNER & HU, PC 1616 S. VOSS ROAD, SUITE 750 HOUSTON, TX 77057-2631			EXAMINER MEW, KEVIN D	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/715,787	BARANY ET AL.	
	Examiner	Art Unit	
	Kevin Mew	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 September 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-16,18-29, 31-34, 36-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 5-12, 14-16, 18-29, 31-33, 37-39 and 41 is/are allowed.
- 6) ☒ Claim(s) 1, 3-4, 13, 34, 36, 40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Final Action

Response to Amendment

1. Applicant's Remarks/Arguments filed on 9/11/2007 regarding claims 1, 34, 36, 40 have been considered. Claims 1, 3-16, 18-29, 31-34, 36-41 are currently pending in the application. Claims 2, 17, 30 and 35 have been cancelled by applicant.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 3, 34 are rejected under 35 U.S.C. 102(e) as being anticipated by Rostoker et al. (USP 6,006,105).

Regarding claims 1, Rostoker discloses a method of interleaving speech data (**interleaving voice data**, col. 5, lines 16-23, col. 16, lines 18-50, col. 17, lines 13-16) communicated with a particular mobile station (**a wireless communication device**, col. 8, lines 29-42, element 22, Fig. 3) over a plurality frames (**over communication signals**, col. 11, lines 1-25), comprising:

receiving, by a system from the particular mobile station in a communications session over a wireless channel, a first set of speech data (**receiving, by the base station from the**

mobile station 22 in a communication session over a wireless channel in Fig. 1, a first set of communication voice signals, col. 5, lines 16-23, col. 10, lines 56-67, col. 13, lines 9-13), wherein the first set of the speech data has been interleaved by the particular mobile station (**a first set of communication voice signals have been interleaved by mobile station 22**, col. 5, lines 16-23, col. 10, lines 56-67, col. 16, lines 18-50, col. 17, lines 13-16 and Fig. 3) according to a first algorithm over plural frames (**according to the DSP processing for the GSM format over the communication voice signals**, col. 10, lines 56-67); and

receiving, by a system from the mobile station in a communications session over a wireless channel, a second set of speech data (**receiving, by the base station, from the mobile station 22 in a communication session over a wireless channel in Fig. 1, a second set of communication voice signals**, col. 5, lines 16-23, col. 11, lines 1-26, col. 13, lines 9-13), wherein the second set of the speech data has been interleaved by the particular mobile station (**a second set of communication voice signals have been interleaved by mobile station 22**, col. 5, lines 16-23, col. 11, lines 1-26, col. 16, lines 18-50, col. 17, lines 13-16 and Fig. 3) according to a second algorithm over plural frames (**according to the DSP processing for the CDMA/TDMA format over the communication voice signals**, col. 11, lines 1-26).

Regarding claim 34, Rostoker discloses an article comprising at least one storage medium containing instructions that when executed cause a system to perform:

Interleaving a first set of speech traffic frame (**a first set of communication voice signals have been interleaved by mobile station 22**, col. 5, lines 16-23, col. 10, lines 56-67, col. 16, lines 18-50, col. 17, lines 13-16 and Fig. 3) in a communication session with a radio

network over plural bursts (**in a communication session with a radio network over GSM plural bursts**, col. 10, lines 46-55 and Fig. 1) according to a first algorithm (**according to the DSP processing for the GSM format**, col. 10, lines 56-67); and

interleaving, by the mobile station, a second set of the speech data (**a second set of communication voice signals have been interleaved by mobile station 22**, col. 5, lines 16-23, col. 11, lines 1-26, col. 16, lines 18-50, col. 17, lines 13-16 and Fig. 3) in a communication session with a radio network over plural bursts (**in a communication session with a radio network over TDMA plural bursts**, col. 2, lines 46-56 and Fig. 1) according to a second algorithm (**according to the DSP processing for the CDMA/TDMA format over the communication voice signals**, col. 11, lines 1-26); and

cause the first and second interleaved speech traffic frames to be transmitted to the radio network in the communication session (causing first interleaved voice data in GSM format and second interleaved voice data in CDMA/TDMA format to be transmitted to the radio network in the communication session, col. 10, lines 56-67, col. 11, lines 1-26, and col. 12, lines 32-44 and Fig. 1).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rostoker et al. in view of Gorday et al. (USP 6,426,980).

Regarding claim 3, Rostoker discloses all the aspects of claim 1 and interleaving the data according to the first or second algorithm, except fails to explicitly show interleaving over frames of a multiframe.

However, Gorday discloses interleaving over blocks of a QAM bit stream (**interleaving over blocks of a multi-frame**, Fig. 3).

Therefore, it would it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the interleaving system and method of Rostoker with the teaching of Gorday in interleaving over blocks of a QAM bit stream such that the interleaving system and method of Rostoker will show interleaving over frames of a multiframe such as the one taught by Gorday.

The motivation to do so is to provide a bandwidth efficient transmission method such as QAM to yield the highest potential data throughput by its use of amplitude as well as phase modulation.

4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rostoker et al. in view of Gorday et al., and in further view of Olofsson et al. (USP 6,134,230).

Regarding claim 4, Rostoker and Gorday disclose all the aspects of claim 3 above, except fail to explicitly show the method of claim 3, wherein interleaving over frames of the multiframe comprises interleaving over a General Packet Radio Service multiframe.

However, Olofsson discloses a GPRS system that utilizes 16-bit QAM modulation scheme (col. 2, lines 46-67, col. 3, lines 1-3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the interleaving system and method of Rostoker and Gorday with the teaching of Olofsson in using 16-bit QAM modulation in a GPRS system such that the QAM bit stream/multiframe of Rostoker and Gorday will be formatted as GPRS frame.

The motivation to do so is to provide the capability to vary the user bit rate such that a higher voice quality is achieved by using a higher user bit rate.

5. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rostoker et al. in view of Gorday et al., and in further view of Hakansson et al. (US Publication 2004/0062274).

Regarding claim 13, Rostoker and Gorday discloses all the aspects of claim 3 above. Gorday also discloses the multiframe (QAM bit stream) comprises plural blocks (**plurality of interleaving blocks**, Fig. 3) and wherein interleaving the data frames according to the first and second algorithms (**first interleaver interleaves a first set of calls into I-channel bit stream and second interleaver interleaves a second set of calls into Q-channel bit stream**, col. 4, lines 50-58).

Rostoker and Gorday may not explicitly show each block comprises plural frames, each frame containing plural bursts, the data being carried in data frames interleaved over bursts in the plural frames, and receiving an end-of-data indicating frame to indicate that a data frame is the last data frame; and interleaving the end-of-data indicating frame according to predetermined algorithms,

wherein the end-of-data indicating frame according to the predetermined algorithms enables the end-of-data indicating frame to end within the same block carrying the last data frame.

However, Hakansson discloses a block that comprises plural frames (see **the TDMA frames in each block in Figs. 5 and 6**), each frame containing plural bursts (see **the bursts in each frame in Figs. 5 and 6**), the data being carried in data frames interleaved over bursts in the plural frames (see lines 1-12, paragraph 0027 and Figs. 5 and 6), and a method comprising:

receiving an end-of-data indicating frame to indicate that a data frame is the last data frame (**receiving SID_FIRST frame**, Fig. 5); and

interleaving the end-of-data indicating frame according to predetermined algorithms (**interleaving SID_FIRST frame with the last speech data frames**, see frames 5-8, Fig. 5),

wherein the end-of-data indicating frame (**SID_FIRST frame**, Fig. 5) according to the predetermined algorithms enables the end-of-data indicating frame to end within the same block carrying the last data frame (**by interleaving TDMA frames for the Last Speech frame with SID_FIRST markers to enable the last speech frame to end in the same block carrying the last speech data frame**, see frames 5-8, Fig. 5).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the interleaving system and method of Rostoker and Gorday with the teaching of Hakansson in interleaving SID_FIRST frame with the Last Speech frame such that the interleaving system and method of Rostoker and Gorday will interleave the end-of-data indicating frame according to predetermined algorithms, wherein the end-of-data indicating

frame according to the predetermined algorithms enables the end-of-data indicating frame to end within the same block carrying the last data frame.

The motivation to do so is to utilize the unused half bursts so that radio resources are not wasted.

6. Claims 36, 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rostoker et al. in view of Hamalainen (USP 6,072,787).

Regarding claims 36, 40, Rostoker discloses a method of interleaving speech data over a plurality of frames, comprising:

interleaving, by a mobile station, a first set of speech data (**a first set of communication voice signals have been interleaved by mobile station 22**, col. 5, lines 16-23, col. 10, lines 56-67, col. 16, lines 18-50, col. 17, lines 13-16 and Fig. 3) according to a first algorithm over plural frames (**according to the DSP processing for the GSM format over the communication voice signals**, col. 10, lines 56-67) for communication over a wireless channel in a communication session (**in a communication session over a wireless channel in Fig. 1 and col. 12, lines 32-44**); and

interleaving, by the mobile station, a second set of the speech data (**a second set of communication voice signals have been interleaved by mobile station 22**, col. 5, lines 16-23, col. 11, lines 1-26, col. 16, lines 18-50, col. 17, lines 13-16 and Fig. 3) according to a second algorithm over plural frames (**according to the DSP processing for the CDMA/TDMA format over the communication voice signals**, col. 11, lines 1-26) for communication over a wireless

channel in the communication session (**in a communication session over a wireless channel in Fig. 1 and col. 12, lines 32-44**).

transmitting the interleaved first and second sets of speech data to a radio network over the wireless channel in the communication session (**cause first interleaved voice data in GSM format and second interleaved voice data in CDMA/TDMA format to be transmitted to the radio network in the communication session, col. 10, lines 56-67, col. 11, lines 1-26, and col. 12, lines 32-44 and Fig. 1**).

Rostoker does not explicitly show the telephone interface is coupled to a half-rate mobile station.

However, Hamalainen discloses that a half-rate traffic channel is established with a mobile station in a wireless communication system (col. 2, lines 8-17).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the interleaving schemes of Rostoker with the teaching of Hamalainen in establishing a half-rate traffic channel with a half-rate mobile station such that speech data received at the interleaving system of Rostoker comes from a half-rate mobile station.

The motivation to do so is to increase the capacity of the wireless communications system by doubling the number of subscribers when half-rate channel is established rather than full-rate channel.

Allowable Subject Matter

7. Claims 5-12, 14-16, 18-29, 31-33, 37-39, 41 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

In claim 5, the data is carried in data frame N starting in block B(x), and wherein interleaving the data frame N according to the first and second algorithms comprises interleaving the data frame N over blocks $B(x + 2k)$ and $B(x + 2k + 2)$, where $k = \text{INT}(N/2)$.

In claim 14, wherein the last data frame is data frame M starting in block B(x), wherein, if M is odd, interleaving the data frame M comprises interleaving the data frame M over bursts in the last frame in block B(x) and the first three frames of B(x+2), and wherein interleaving the end-of-data indicating frame comprises interleaving the end-of-data indicating frame over bursts in the last three frames of block B(x+2).

In claim 20, data frames I, $I = 0$ to M, are received starting in block B(x), the controller adapted to interleave data frame I over blocks $B(x + 2k)$ and $B(x + 2k + 2)$, where $k = \text{INT}(I/2)$.

In claim 38, the first data frame n is interleaved according to the first algorithm in response to n being an even number, and the second data frame is interleaved according to the second algorithm in response to n+1 being an odd number.

In claim 39, an article comprising at least one storage medium containing instructions that when executed cause the system to:

in response to detecting that the first mobile station has entered discontinuous

transmission mode, re-assign the wireless channel portion to a second mobile station to enable multiplexing of traffic from the second mobile station onto the wireless channel portion while the first mobile station is in discontinuous transmission mode;

receive a request from the first mobile station to re-acquire the wireless channel portion, the request transmitted by the first mobile station in response to the first mobile station exiting discontinuous transmission mode.

In claim 41, a system for use in a mobile communications network, comprising:

in response to receiving the indication that the first mobile station has entered discontinuous transmission mode, to multiplex traffic from a second mobile station onto the wireless channel portion while the first mobile station is in discontinuous transmission mode, wherein the controller is adapted to further:

receive a request from the first mobile station to re-acquire the wireless channel portion, the request transmitted by the first mobile station in response to the first mobile station exiting discontinuous transmission mode.

Response to Arguments

8. Applicant's arguments filed 9/11/2007 with respect to claims 1, 34, 36, 40 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Mew whose telephone number is 571-272-3141. The examiner can normally be reached on 9:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on 571-272-3179. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kevin Mew *KM*
Work Group 2616

Chi Pham
CHI PHAM
SUPERVISORY PATENT EXAMINER
12/06/07